Aboitiz Data Innovation

ADI – Artificial Intelligence: Real World use cases in Power

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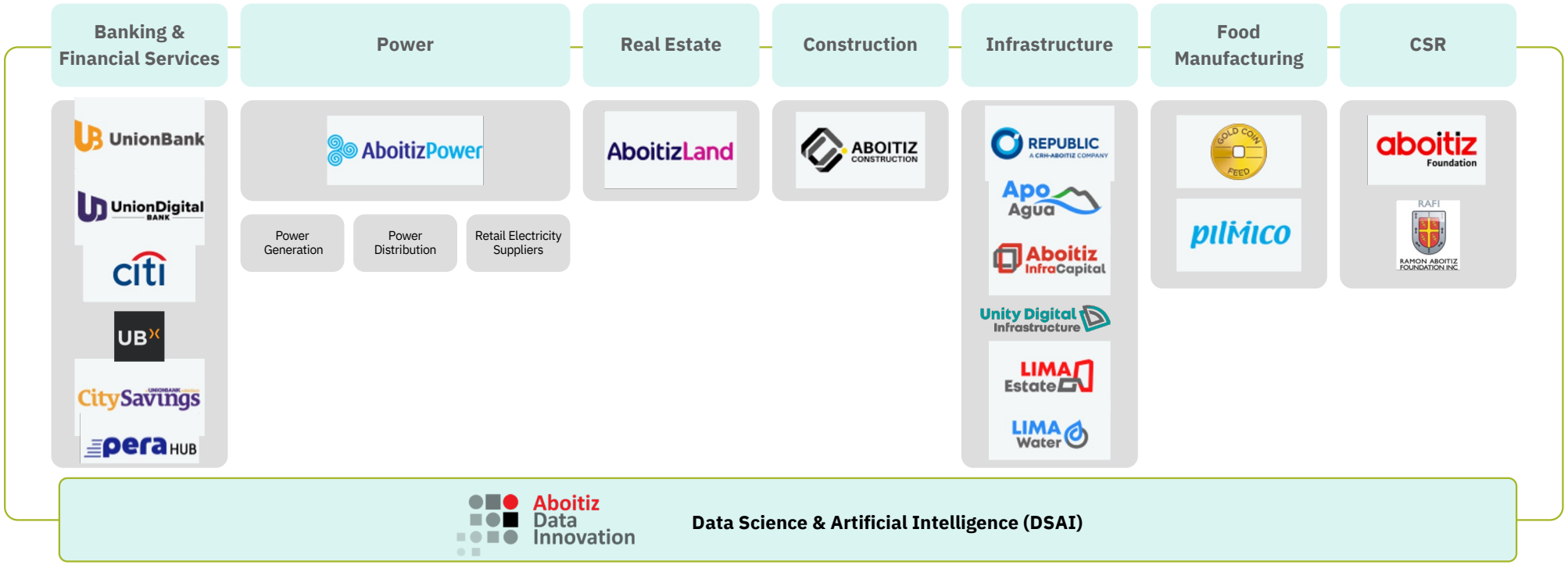
Chief Data Officer ***Aboitiz Power***

The Aboitiz Group

aboitiz | GT2025

Together we are building the PH's first techglomerate

10,000+ people



Source: 2022 Aboitiz Integrated Report & Aboitiz Group LinkedIn

AI in Power

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Innovation

Disruption Unmanaged

South Australia's blackout explained (and no, renewables aren't to blame)

Some wrongly implicated windfarms when the entire state lost power after one of the worst storms in 50 years knocked out high-voltage power pylons

Nick Xenophon, Barnaby Joyce and others Australia's blackout. But it is simply not true.

On Wednesday, something very unu Australia lost power. Known as a "s Australian Energy Market Operator never having the unfortunate oppo into place.

Forbes

Jun 17, 2019, 08:38am EDT | 41,892 views

The Paradox of Declining Renewable Costs and Rising Electricity Prices

Brian Murray Contributor

Energy

I write about the nexus of energy, the environment and the economy.

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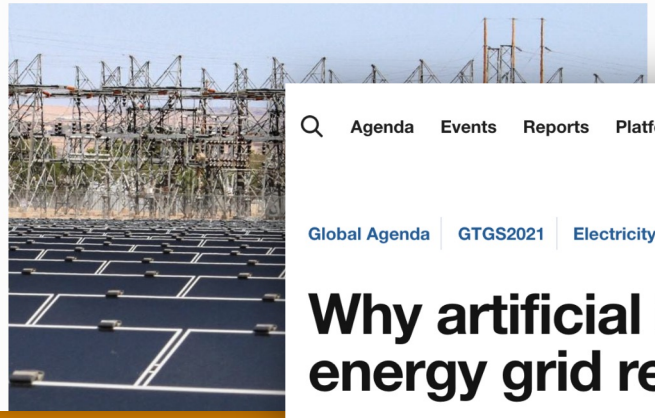
This article is more than 2 years old.



POWER

News & Technology for the Global Energy Industry

POWER Plant ID POWER Events Business Coal Connected Plant Distributed Energy Gas

2024

Proctor

UE

024

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Experience Are

clear Plant

Nuclear

Mobility, Flexibility, Scalability: SMRs Forging Nuclear's Future

The need for emissions-free power generation, along with the ability to provide more power when and where it's needed, is driving research and development of smaller nuclear reactors.

Energy industry analysts have said nuclear power will be important as part of the move toward zero-emissions electricity generation. They also agree that finding scalable nuclear solutions is key for providing the needed energy in a faster, lower-cost fashion.

Small modular reactors (SMRs), generally considered those with a generation capacity of 300 MW or less, and smaller microreactors are touted as a way to support a more rapid buildout of nuclear power. Countries around the world are looking at projects to install SMRs, particularly as scientists and engineers continue to work on the technology and investors pour money into research and development (R&D).

Agenda Events Reports Platforms

WORLD ECONOMIC FORUM

MY FORUM Join us

Global Agenda | GTGS2021 | Electricity | Artificial Intelligence

Why artificial intelligence is key to renewable energy grid resilience

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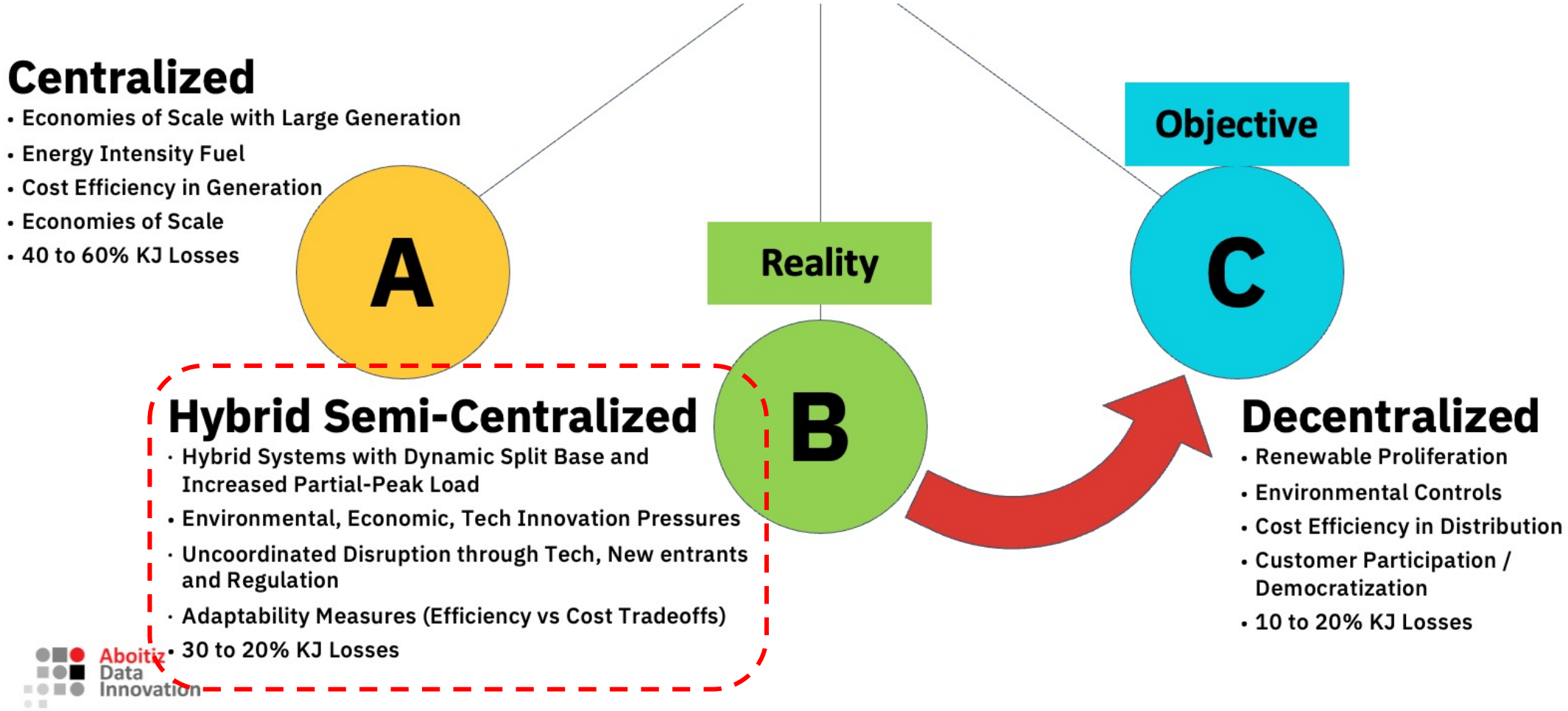
De-carbonization = Resilience



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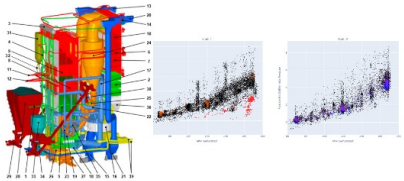
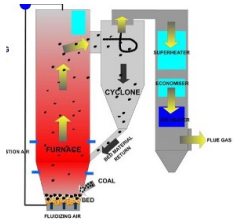
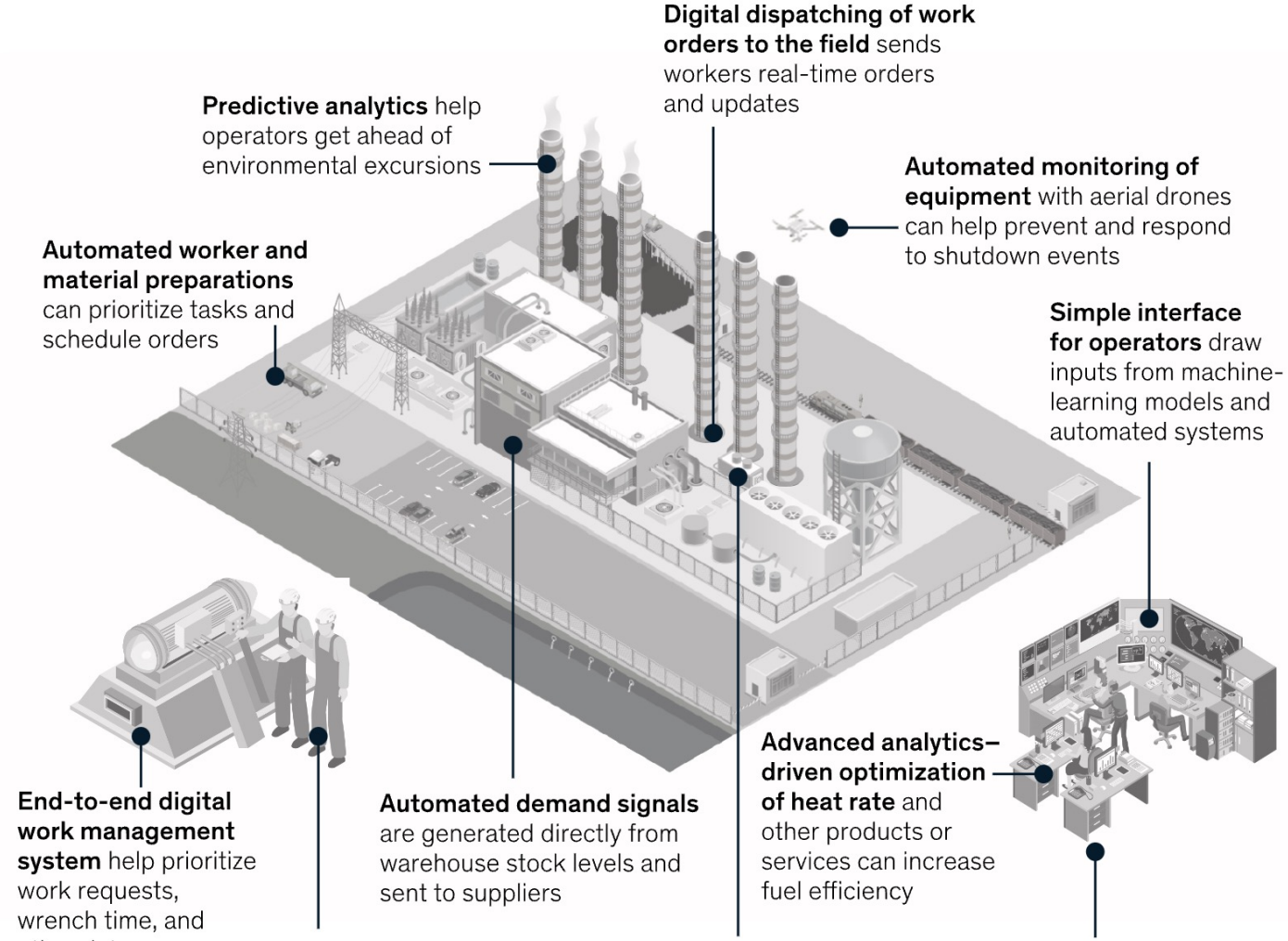
USE CASES
Power Plants

Boiler Health Management



Emission Monitoring (NOx, SOx, Co2)





Predictive analytics help operators get ahead of environmental excursions

Digital dispatching of work orders to the field sends workers real-time orders and updates

Automated monitoring of equipment with aerial drones can help prevent and respond to shutdown events

Automated worker and material preparations can prioritize tasks and schedule orders

Simple interface for operators draw inputs from machine-learning models and automated systems

End-to-end digital work management system help prioritize work requests, wrench time, and other data

Automated demand signals are generated directly from warehouse stock levels and sent to suppliers

Advanced analytics–driven optimization of heat rate and other products or services can increase fuel efficiency

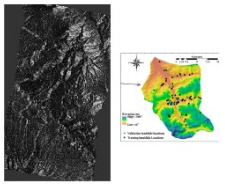
Augmented and virtual reality used for safety training and real-time employee performance tracking

Real-time tracking of fuel requirements and recommended blending levels can monitor fuel consumption and availability

Centralized control-room monitors with prioritized dashboard can reduce workload and enable better fleet-level visibility

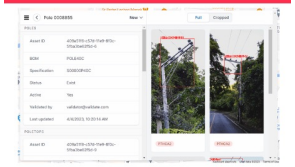
Use Cases Across

Geo-structural Monitoring



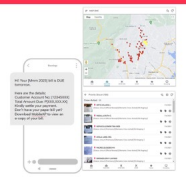
Jul 15, 2023 SAR Scan
Manolo Fortich Catch Basin

AI-Compatible Units

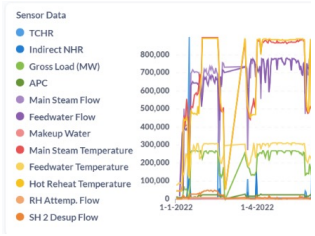


Bill-shock Forecasting

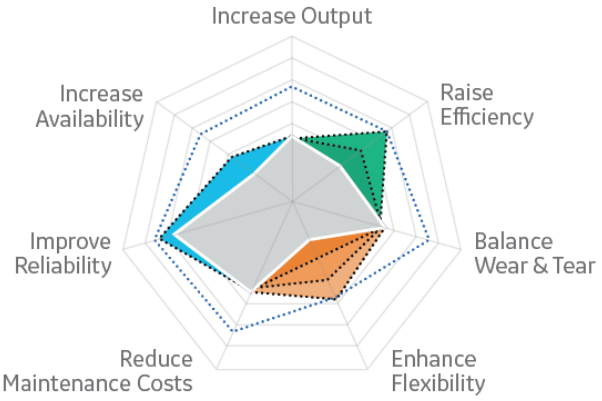
Collection Intelligence

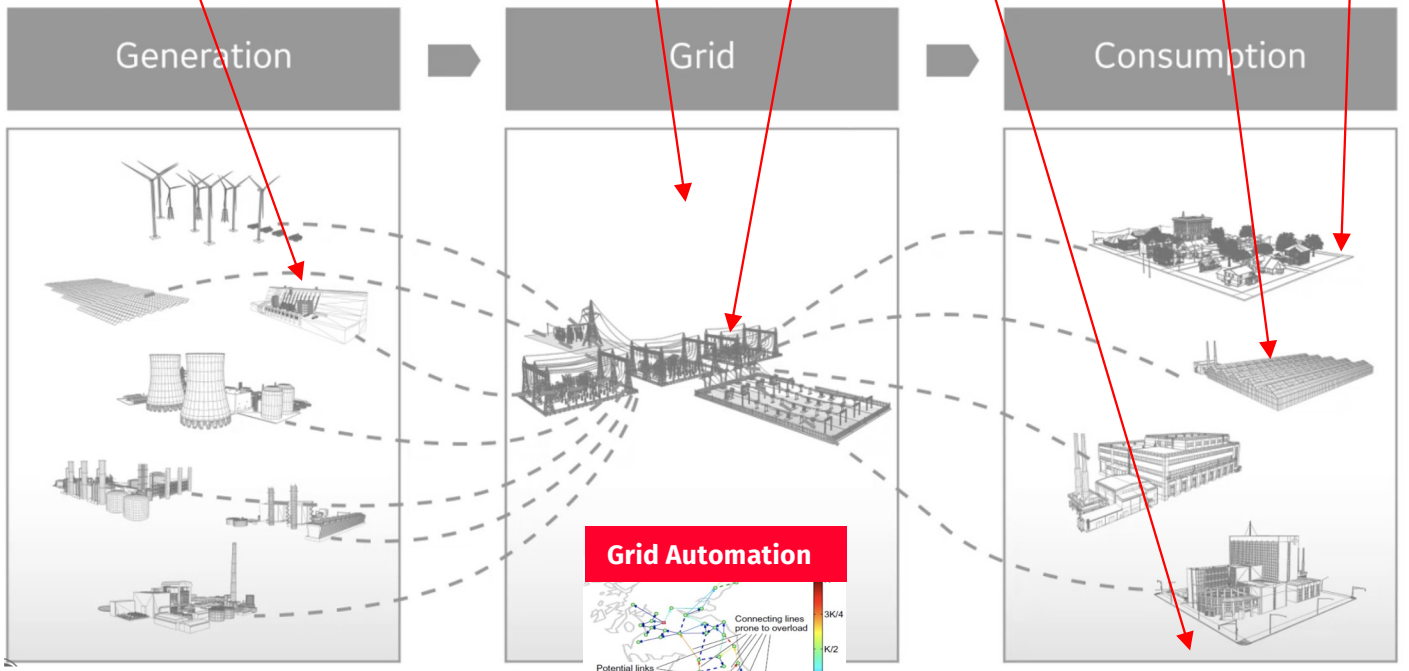


Heat Rate Monitor & Optimize



Energy Economics





Grid Automation

Image Source: GE Electricity Value Network.

AI Roadmap for Netzero Energy

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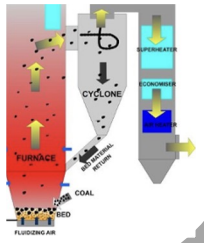
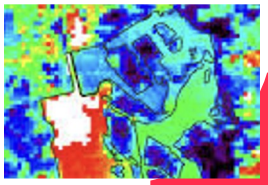
***Intelligent Feedback Loop*- Key to Implement AI for Sustainability**





Scale

- Scale Practice
- Updated People, Process & Technology

Intervention

- Innovation
- Reliability /Availability
- Efficiency
- Optimization

Monitoring

- Risk Scoring
- Impact Calculations
- Signal Identification

#Salvation *Climate Change Risk Monitoring "Geo-X-AI".*

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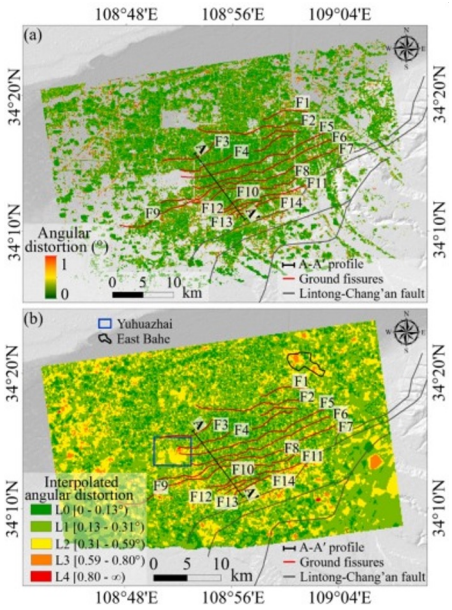
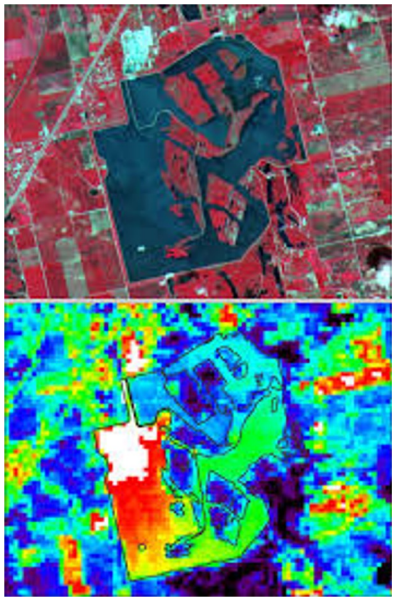
1. Landslide Risk Profiling



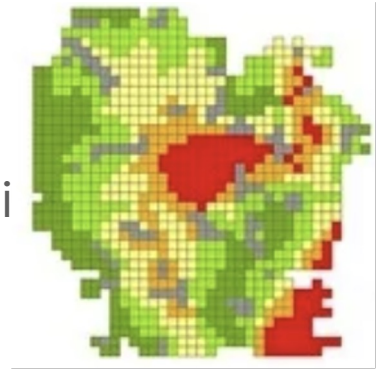
Zhao, F., Gong, W., Tang, H., Pudasaini, S. P., Ren, T., & Cheng, Z. (2023). An integrated approach for risk assessment of land subsidence in Xi'an, China using optical and radar satellite images. Engineering Geology, 314, 106983.

2. Emission Leaks & Ai Quality Risk

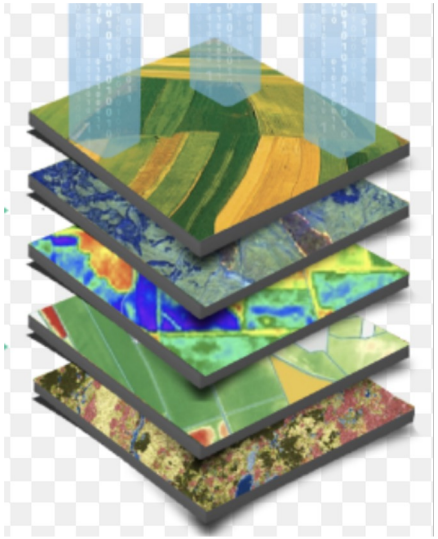


Images courtesy NASA/GSFC/MITI/ERSDAC/JAROS, and U.S./Japan ASTER Science Team.

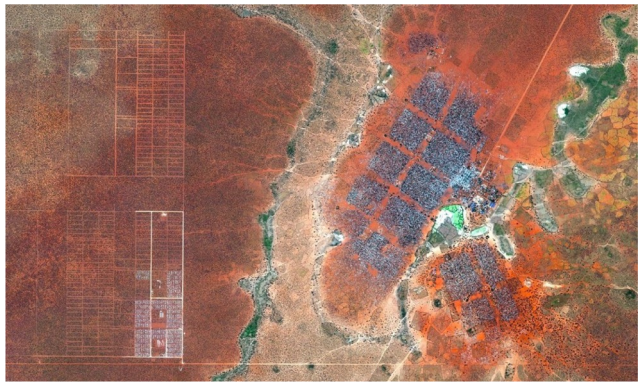
3. Forest Fire Risk



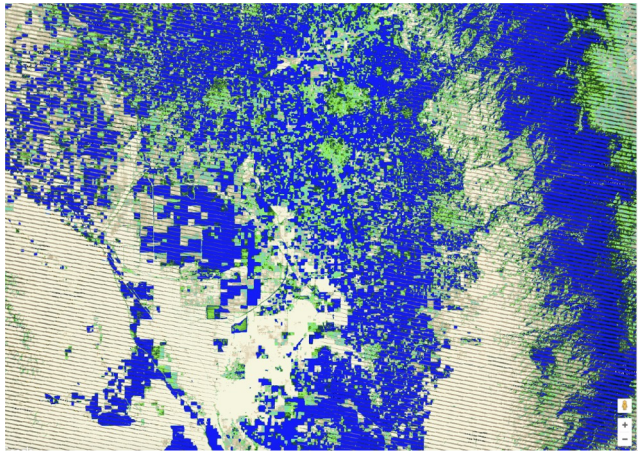
4. Crop Yield Risk



6. Climate Refugee Monitoring



5.Water Resources Risk



How do they align to strategy?

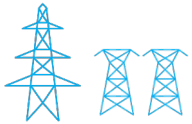
GENERATION

GEN - Thermal

GEN - Nuclear

GEN - Renewable

GRID



Smart & Distributed

TRADING

CONSUMPTION

Commercial & Industrial

Reduce O&M Costs OPEX (Precision Based Maintenance)

Optimize MWH Nominations (Fuel & MWH)

Eliminate Outages & Predictive Asset Systems Modelling

Optimize Portfolio Rebalancing

Energy Services

Increase Generation Capacity, Efficiency, Flexibility

Autonomous Restoration

Reduce Environmental Impact

Reduce Load Volatility

Load & Plant Attack Protection

Output & Price Prediction

Reduce Fuel Costs

Hydrology, Steam optimization

Vegetation & Weather Prediction

Predict Consumption Behaviour

Forecast Output, Load & Price Volatility Protection

P2P Trading

Forecast Failure & Degradation

Bill Protection and Facilitate PROSUMER

Optimize Generation Investment

Improve Demand Response

Improve Power Conservation

Optimize Investment CAPEX (System Balanced)

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